Advantages of XML for EDI

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Present Situation

Electronic Data Interchange (EDI) has been in use for a quarter century. Despite the long history and numerous advantages of EDI, only an estimated 125,000 organizations worldwide have an EDI system. Furthermore, there are only 80,000 EDI enabled businesses in the US. That works out to less than 2% of the 6.2 million businesses registered in the United States. Due to cost and complexity, small and medium sized businesses find it difficult to implement and maintain a traditional EDI system. For these reasons, most businesses do not enjoy the operating efficiencies that an automated electronic information routing system promises.

The obstacles that businesses must overcome to implement their EDI/EC solutions seem insurmountable, but that is changing. With the advent of XML/EDI, companies can use current standards and existing technologies to enable a simple and meaningful electronic information routing process.

Problems with Traditional EDI

The high cost of implementation and the slow rate of message definition creation have contributed to low adoption levels. Furthermore, EDI has failed to deliver on its vision to remove paper from the trading process. Though EDI has a number of strong points, it also has certain weak areas. Setting up traditional EDI is expensive and time consuming. Trading partners have to synchronize their internal systems with the systems of the partners. This can be a big problem if there are a large number of partners. A change in the format or a new partner means that the translation program needs to be changed. The traditional system does not support versioning. Furthermore, it supports only the data and structure. No support for process and information exchange is available.

XML is being proposed to overcome many of these problems and extend EDI. XML promises to deliver EDI as an alternate technology.

XML and EDI

The answer to improving EDI lies in developing a new paradigm for business data exchanges, combining the promise of XML with the lessons learned from EDI. XML can also build on the 30 years of EDI rather than "reinvent the wheel."

An EDI application for XML provides the structural complexity that supports and parallels today's EDI transaction sets. XML provides a rich document structure that can be nested to any level of complexity. With XML, documents are like chameleons, capable of being processed by different components, delivered by different mechanisms, and displayed to the user in different ways. It has been envisaged that XML can be used as a "carrier" for the document information so that the transaction can carry not only data (like traditional EDI), but also code (at each level in the transaction tree).

The logical structure of the document and tag set can be specified in a Document Type Definition or DTD. (The best-known example of a DTD is HTML, which is defined by a DTD describing the structure of HTML documents.) In a DTD, sets of elements and their attributes are defined; the names that are used as tags are assigned; and the element relationships or transaction is defined. If a DTD is used, then programs can validate the transaction's structure. One can validate the structure of an XML/EDI document automatically.

Defining one's own markup language (DTD) with XML is surprisingly simple. Using XML, enterprises have more options for the display and processing of incoming data. The Extensible Style Sheet Language (XSL) allows for the visual display of incoming data and formatting of those same data for further processing by corporate systems. In addition, more end-user application packages already support XML that enables the recipients to capture and process the incoming data directly. Even with legacy systems, industry groups can specify standard scripting language or Java code that reflects industry rules to provide for greater mapping and integration of data exchanged over the Web with XML.

XML can be integrated with the existing EDI systems by providing application specific forms, generating EDI message formats over the Internet or value added networks and allowing data received in EDI format to be interpreted according to predefined rules for display using a user-defined template. XML allows:

- Users to extend the EDI applications.

- Message creators to add application specific data to standardized message sets.

- Message creators and receivers to display the contents of the fields with explanatory material specific to the application and the preferences of the user.

- System developers to customize the help information associated with the data. XML allows field value checking.

Finally, XML makes applications implementation easier, allowing quicker reach into vertical markets, reduced message stores when processing transactions and enabling document-centric tools like search engines and push products to supplement database mechanisms.

Integration of EDI and XML

EDI information forms part of the logic structure of the XML document. Users can define their own element types to hold EDI information, so long as they label them with agreed attributes. A DTD can be created to formally defining the structure of EDI messages. EDIFACT/X12 messages can be placed in an XML shell element and the entire message or part of it can be in XML.

XML/EDI is the fusion of five technologies. The components are built on the top of existing standards for transmitting and processing XML-encoded data. The five technologies are XML, EDI, Templates, Agents and Repositories.

- XML provides the foundation. It brings all the rich capabilities and transport layers of the web.

- EDI gives the ability to express data in a simple format. XML/EDI provides backward capability to existing EDI transactions.

- Templates or Rules supplemented by the DTD's ensure that the transaction interoperability and processing is enabled. DTD's allow transaction interoperability. Templates allow rules to define the processing to be done on the transactions.

- Agents interpret the templates, interact with the transactions and allow the users to create new templates. Agents handle the processing required to analyze the data and provide a data interface to other systems.

- Repositories are shared directories that allow users and automated agents to lookup the meaning of the EDI element definitions. Traditional EDI systems support the manual user lookups only. The repositories can include the existing EDIFACT, X12 or BSI dictionaries. The Gartner Group expects EDIFACT and ANSI to operate XML repositories by the end of 2000.

Advantages of XML-EDI over Traditional EDI

1. Since the metadata is sent along with the data, data elements not used with a specific trading partner can still be sent or received without separate agreements or exception processing. This results in minimal trading partner-specific maps.

2. XML-based document formats can be shared by many different classes of applications, but rendered differently by each of the applications. This means that an EDI-XML agent, workflow agent, web browser, search engines and ERP applications can use the same document.

3. Unlike specific technical and software skills required for traditional EDI, technical skills and software tools like parsers, search engines can be leveraged across more than one class of application.

4. The usage of generic software tools and technical skills will lower the cost of implementation and allow easy implementation.

5. XML allows data elements to be created that contain both presentation and content metadata.

6. XML leverages on the web and TCP/IP infrastructures and tools. This means that the data can be accessed over the Internet infrastructure. It can be delivered in different mechanisms and displayed in various ways.

7. Interfacing with legacy systems combined with backward compatibility to existing EDI systems ensures that seamless integration is possible.

8. Enables flexible business models

9. Allows object-oriented documents since data and the rules reside together. This allows searches, archiving, reading and navigation simpler.

10. Allows interactive transactions rather than batch transactions.

Summary

XML based EDI provides the best means to perform Business to Business transactions in a cost effective and efficient manner. The Gartner Group predicts that by year-end 2002 XML-EDI will account for 30 percent of transactions with another 30 percent supported by XML-EDI to EDI gateways. Only 40% of transactions will be supported by traditional EDI. Combined with the inherent simplicity of using XML, it promises to be the next standard for automating business transactions.